

SECTION 4. SPECIFIC PROGRAM DESCRIPTIONS

Section 2 demonstrates that there are many local, state, and federal agencies, tribes, and citizen groups working as watershed partners and contributing to the mosaic of watershed activities. The brief overviews of partner activities included in Section 2 suggest some of the possible opportunities and barriers within the watershed approach. The purpose of these summaries was to highlight both the diversity of participants and programs, and the degree to which their missions and information management and communication support needs are complementary. Each of the interview participants is looking to better integrate their activities and fulfill their mandates through the watershed approach. In Section 3 the watershed information clearinghouse was proposed as a tool for helping coordinate the activities of the partners and programs, and for improving information management and the development of communication products. The watershed information clearinghouse is a key component of watershed approach capabilities for fulfilling the requirements and objectives of the Endangered Species Act and wet weather pollution control programs. The purpose of Section 4 is to evaluate if and how the watershed approach can effectively fulfill the requirements of the Endangered Species Act and wet weather pollution control programs. This section aims to briefly summarize the regulations that drive the watershed activities of those partners responsible for implementing these two program areas. It also aims to describe how the watershed approach, together with watershed information clearinghouses, can be used by watershed partners to more effectively fulfill the objectives of the two program areas.

4.1 Endangered Species Act

The Endangered Species Act (ESA) was first passed by Congress in 1973 (16 USC §§ 1531–1543 (1982)) for the purpose of preventing the extinction of "endangered" and "threatened" species by prohibiting both the "taking" of individuals and the destruction of critical habitat. The ESA is relevant to aquatic ecosystem protection where aquatic species, or non-aquatic species dependent on aquatic habitat, are listed as endangered or threatened. The ESA is jointly administered by the U.S. Fish and Wildlife Service (for terrestrial and native freshwater species) and the National Marine Fisheries Service (for marine and anadromous species).

The interviews with U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) (or together the Services) personnel focused on the use of the watershed approach to fulfill the requirements of the Endangered Species Act. The interviews spoke to practical issues such as existing operational procedures and products, and how these could be enhanced through the watershed approach.

All federal agencies including EPA, are responsible for complying with the ESA. In particular, Section 7(a)(2) requires consultation with the Services when any action funded, authorized, or carried out by a federal agency may affect Threatened and Endangered species listed or proposed for listing. Section 7(a)(1) requires agencies to use their authorities to help further the goals of the ESA.

The Services are moving in a direction that will allow them to implement the ESA in a manner that

emphasizes proactive rather than reactive measures. The Services are working to more effectively coordinate with private land owners and public agencies to build endangered species considerations into their daily operations. Improved coordination will help to avoid the costly and time-consuming litigation that has figured prominently in the implementation of the ESA to date. The Services have made substantial progress in adopting policies that improve the timing and basis of negotiation with stakeholders in seeking compliance with the ESA. Table 4–1 lists the titles of guidance documents and informational pamphlets that describe procedures that the Services are following to promote proactive implementation of several Sections of the ESA. These documents were the primary reference materials used to evaluate the compatibility of the watershed approach with the ESA.

USFWS 1996. Biological Assessment Preparation and Review. A Workshop Sponsored by the U.S. Fish and Wildlife Service, Resources Northwest, Inc., and The Washington Chapter of the Wildlife Society. Held March 10, 1993 at The Inn at Semiahmoo, Washington.
The National Marine Fisheries Service 1995. Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale. Environmental & Technical Services Division, Habitat Conservation Branch.
USFWS/NMFS 1994. No Surprises: Assuring Certainty for Private Landowners in Endangered Species Act Habitat Conservation Planning. Joint FWS/NMFS "No Surprises" Policy.
USFWS n.d. What's all this stuff about "Habitat Conservation Planning" and "Incidental Take Permits" in Pacific Northwest Forests? U.S. Dept. of the Interior Fish & Wildlife Service Region 1.

Table 4–1. Procedures and Policies Used To Implement the Endangered Species Act.

The ESA provides a clear focus on habitat protection (but only for "listed" species). For example, Section 4 of the ESA allows agencies to determine "critical" habitat for the maintenance and recovery of endangered species, while Section 7 requires that the impacts of human activity on species and habitat be avoided. The pending listing of salmon species throughout the Pacific Northwest will dramatically expand the range over which ESA provisions apply. The geographic range of listed species in this region will become so large that the activities of virtually every natural resource and water quality management agency will need to comply with the requirements of the ESA. The salmon listing will thus require a closer linkage to the interests and activities of water quality programs. This increased geographic scale of application accentuates the need for a systematic method of improving coordination among affected stakeholders. Elements of a statewide watershed approach can provide the framework necessary for integrating the activities of local, state, and federal stakeholders in this process.

The first four subsections (4.1.1 through 4.1.4 below) briefly describe portions of four of the ESA sections that have the most relevance to watershed activities. The final subsection (4.1.5 below) places the activities and requirements of the ESA Sections described in the preceding subsections in

the context of Ecology's Water Quality Program watershed cycle steps (described in Section 2.1 of this report).

4.1.1 ESA Section 4: Species Listings and Recovery Plans

Section 4 of the ESA addresses the listing process for threatened or endangered species, designation of critical habitat, creation of recovery plans, and monitoring of species. The listing process for new species is well defined in terms of criteria and scheduling. The geographic range of species being considered for listing may extend far beyond the largest hydrological unit. However, the accumulation of relevant information within hydrological units can improve access to the "best scientific and commercial data available" for a species. This information could be compiled from watershed information clearinghouses located within the geographic range of each species under consideration. The length of most statewide watershed cycles is five years, which is consistent with the status review required by Section 4.

The definition of "critical habitat", which has a regulatory effect on land use within a watershed, has changed over the life of the ESA. In response to the original ESA and the Services promulgated regulations which were based on a broad interpretation of what qualified as critical habitat. These regulations also restricted actions that might reduce the distribution or population level of a species enough to adversely affect its survival. Congress amended the ESA in 1978 to narrow the definition of critical habitat, and to create a critical habitat designation process. These amendments introduced balancing criteria, stating that critical habitat should only be defined "after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat." USFWS implementation of these amendments directs that critical habitat definitions focus only on those "principal biological or physical constituent elements...that are essential to conservation of the species" (50 CFR § 424.12(b) (1991)).

However, subsequent rule making efforts (The Critical Habitat Final Rule, Fed. Reg. Notice for Jan. 15, 1992 and USFWS Critical Habitat Guidance Document, Aug. 5 1992) allowed for an expanded definition of critical habitat through the designation of Critical Habitat Units (CHUs). CHUs are formally designated and mapped on federal lands, and encompass a larger geographic area than would otherwise be considered in a critical habitat designation (as per 50 CFR sec.424.12(b) (1991)). Furthermore, during the formal consultation process for proposed actions on federal lands, the USFWS must consider the action's effect on the CHU as a whole, the relationship to other CHU's, the sub-province, and the range of the species to determine whether the action is likely to result in "destruction or adverse modification" of critical habitat (Biological Assessment Preparation and Review, March 10, 1993, USFWS). The expanded definition of Critical Habitat Units, and the consideration of related factors, are more compatible with a watershed approach than the earlier strict definition of critical habitat was.

Section 4 also requires that a recovery plan for the survival and protection of listed species be developed after a species has been listed, and critical habitat for that species has been defined. The necessary components of a recovery plan are:

- 1) a description of site specific management plans necessary to achieve the goal of species conservation and survival;
- 2) objective, measurable criteria that when met would allow species to be removed from the list; and
- 3) estimates of the cost and time required for carrying out measures necessary to achieve the plan's goal, and to achieve intermediate steps towards that goal.

Recovery plans do not hold the force of law (i.e., they are not binding to any party). However, there is considerable flexibility in appointing the recovery teams that develop and implement a recovery plan. The recovery teams may be composed of "appropriate public and private agencies and institutions, and other qualified persons." Therefore, individual watershed teams could serve as recovery teams. Alternatively, existing watershed teams could be incorporated into a recovery consortium for a designated geographic area (e.g., WQMA). Watershed or basin plans within the defined geographic range of listed species could incorporate input from recovery teams. Interview participants suggested that a watershed plan, or a series of mitigation activities that have been aggregated within a watershed information clearinghouse, could potentially contribute to a regional recovery plan. However, interview participants indicated that the activities and requirements of Section 4 present more obstacles for integration with the watershed approach than other Sections of the ESA.

During the interviews two features of the listing process were identified that would be difficult to address through a watershed approach:

- information collection for a listing must be conducted over the known range of the species (i.e., across watersheds, across state and international boundaries); and
- the listing process has specific criteria and scheduling that are likely to be inconsistent with the needs of other watershed partners.

The statewide process could provide watershed groups and teams a schedule for consulting with the Secretary of the Interior in establishing recovery teams and developing recovery plans once the Coho Salmon is listed.

Another component of the recovery process that may be satisfied with a watershed approach is monitoring for at least five years of these species which have recovered enough to be de-listed.

4.1.2 ESA Section 6: Cooperation with States

Section 6 authorizes the Secretary of the Interior to enter into agreements with states for the administration and management of any area established for the conservation of listed species. The requirements for an "active and adequate program" for the conservation of listed species are as follows:

- 1) authority resides in the state agency to conserve listed species;
- 2) the state establishes acceptable conservation programs for all listed species, and furnishes a copy of the plan and program to the Secretary;
- 3) the state agency is authorized to conduct investigations to determine requirements for the survival of listed species;
- 4) the state agency is authorized to establish programs and acquire land or aquatic habitat for the conservation of listed species; and
- 5) provision is made for public participation in the listing process.

As long as the requirements of the agreement are met, the actual form of the agreement may be some component of a watershed plan.

WQMA watershed teams are likely to include representatives from Ecology water quality programs, water resource programs, Department of Natural Resources, and Fish & Game, along with local agencies responsible for land use, among others. The combined resources and capabilities of these programs and agencies would best meet the five listed criteria. USFWS would need to determine whether there are viable WQMA teams for all CHUs, or for the range of listed species.

Section 6 also authorizes up to 75% cost share for states participating in these programs, and up to 90% cost share when two or more states cooperate in the conservation of the same species. The cost sharing feature of Section 6 could bring an added capability to the development of management strategies by the watershed team. The watershed planning process includes negotiated priority setting and targeting by the watershed team. The Services could benefit from watershed partners who combine data to develop an explicit list of habitat and mitigation priorities for listed species. It is likely that a greater number of these priorities will be funded if an effective cost share program is in place.

4.1.3 ESA Section 7: Consultations under ESA

In relation to federal agencies, the core of the ESA is its clear prohibition of any activity authorized, funded, or carried out by a federal agency which may "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of

habitat of such species," (ESA sec.7 (2)). The process prescribed in the ESA for making the "jeopardy" or "no jeopardy" determination is uniform and prescriptive, thereby offering equal treatment to agencies requesting incidental take permits.

Briefly, the process involves the following steps. First, an initial biological assessment is conducted by the action agency (e.g., EPA) to determine whether the proposed action is likely to "adversely affect" the listed species in question. If not, the applicant submits the assessment and requests an informal consultation with the USFWS. The applicant will most likely receive a "no jeopardy" decision, and be allowed to proceed with the project. If the action is "likely to affect" the species, the initiator can request an informal consultation with the USFWS in order to revise the scope of the project to reduce or eliminate its impact, and continue with the project. If the scope of the project cannot be revised to reduce or eliminate its impact, the assessment will then go through a formal consultation with USFWS and most likely receive a "jeopardy" determination. The resulting Biological Opinion specifies reasonable and prudent alternatives allowing the project to proceed without jeopardizing species, and issues an incidental take permit protecting the agency from additional liability.

Two features of the watershed approach could enhance the Section 7 consultation process.

- The watershed approach and watershed information clearinghouses would compile all available information on watershed conditions. This information could provide an important baseline for evaluating an action in the context of other ongoing activities. In other words, the watershed approach would make more information more accessible. This is important because in the absence of information, the Services must use the most conservative assumptions for the protection of listed species. A clearinghouse could greatly simplify the collection of information needed in the consultation process by those responsible for contacting the Services.
- The watershed approach follows a series of activity steps that are consistent with the steps that have been established for Section 7 consultations (USFWS 1996). The advantage to "mainstreaming" Section 7 consultations is that issues can be identified, and project modifications or mitigation strategies recommended, prior to the completion of the planning process, and before the agreements and logistics for implementation have been prepared.

Although the jeopardy or no jeopardy determination process required by the ESA is prescriptive, there is an opportunity to streamline this process in the Biological Assessment/Evaluation (BA/BE) phase through the use of information contained in a watershed plan. Biological Assessments are required for "major construction activities", and are generally more detailed than Biological Evaluations, which are used in "other" activities. The contents of a BA include: a project description, site specific information including species present and habitat types, expected effects of the action -- including interdependent and interrelated effects, and cumulative effects within the project area, the likelihood of an "incidental take", suggested conservation measures, and determination of effect on listed species. In a well developed watershed plan, much of the information required for a BA/BE will likely be available. If not, it will be the next time a similar information need arises, because the agency can identify the need for assessment information in the watershed strategic monitoring plan.

4.1.4 ESA Section 10: An Exception to the Rule

Clearly, "jeopardizing" the continued existence of any listed species or its habitat is not permitted by the ESA. However, some latitude exists for actions that may incidentally result in a "take" of some small number of a listed species or its habitat. Landowners, like federal agencies, who believe that their otherwise lawful activity may result in a "take" of listed species may apply to the USFWS for an "incidental take permit." An incidental take permit is not a "get out of jail free card" however, because in order to be considered for the permit the landowner must submit a detailed Habitat Conservation Plan (HCP). An HCP is an assessment of the impacts likely to result from the taking of the species, a list of measures the applicant will take to monitor, minimize, and mitigate those impacts, a consideration of alternatives to the take, and any additional measures the USFWS may require as necessary or appropriate.

Functionally, an HCP is a legally binding agreement made between the applicant and the USFWS. It exchanges some takes for a detailed, long-term commitment from the landowner to implement mitigation and/or conservation measures as part of the proposed action. As an additional incentive, the landowner is assured that even if the needs of the species change over time, no additional land or financial commitments will be required of the landowner for the full term of the HCP, which can be 50–100 years (USGS/NMFS, 1994. **ANo Surprises@**).

Thus there are strong incentives for both the landowner and the Services to enter into HCP's, and there is considerable flexibility in the design and scope of the Plan. The scope, content, and time frame of the HCP are determined through agreements made between the Services and the landowner; not by guidelines in the ESA. Thus each HCP can incorporate the specific needs of the species, the landowner, and the watershed(s) in which they reside. These factors combine to make HCPs a potentially important tool in watershed planning efforts.

4.1.5 ESA Activities Integrated Within the Watershed Approach

Ecology is only one of many watershed partners that will be coordinating with the USFWS and the NMFS through the watershed approach to address endangered species requirements. The cycle steps of the Ecology watershed approach are chosen for analysis in this subsection because it is a statewide process that has the capability to include the activities of most other watershed partners. The statewide sequence and schedule of activities is not prescriptive, and should never delay the development and implementation of local individual agreements. Rather, the advance notice and systematic support of watershed teams provided through the statewide framework serves as a catalyst and provides increased capabilities to locally sponsored initiatives.

The watershed approach cycle steps (Scoping, Data Collection and Analysis, Technical Report, and Implementation) are used by Ecology to organize its own activities within a geographic unit (i.e., WQMA). The process provides predictability to other watershed partners. Because Ecology does not have sufficient resources to simultaneously implement all aspects of its watershed approach statewide, it needed a mechanism to manage its work load and resource demands. Sequencing through the

WQMAs using the watershed steps provides this capability to Ecology. The watershed cycle could also be used as a tool by other watershed partners to coordinate their activities on watershed teams. It is well understood that the watershed cycle will not always match the timing needs of others. Where possible, Ecology could amend its schedule to match local circumstances. There will also be determinations that must be made outside of the cycle schedule. In general, however, the cycle could be a useful tool for coordinating activities within watersheds statewide. The discussion below examines how each of the four watershed approach cycle steps could incorporate ESA activities and requirements.

Scoping: The Scoping step includes: outreach activities such as stakeholder meetings and speaking to community groups, newsletters, making contact with established watershed groups, recruitment of a local sponsor, and formation of watershed teams. A key product of this step is the initiation of discussion regarding WQMA goals, objectives, and water quality concerns. In addition, the collection of information for the watershed information clearinghouse begins.

Section 4:

- The listing process requires information on many variables in order to make initial listing decisions, and to update the five-year listing status. During the scoping phase, information that is compiled into the watershed information clearinghouse can be used for the listing determination.

Section 6:

- The Services could provide outreach information on grant availability (approximate dollar amount), and procedures for applying for cost share grants.

Section 7:

- Agencies can contact the Services regarding the schedule and scope of their activities within the WQMA as part of the stakeholder outreach process. The Services can make the species list and designated critical habitat available to the watershed team(s).
- The Services could "piggyback" onto the outreach efforts of the watershed team(s). This might be a good opportunity for education aiming to diffuse misunderstandings regarding ESA regulations and requirements.
- If major projects or activities are ongoing or are already targeted, Scoping could provide a starting point for the informal consultation process.

- The watershed plan describes specific management actions that participating agencies will take to restore or protect the watershed. The commitments and agreements that are part of the watershed plan can be incorporated by reference into a program level consultation and or a pre-listing agreement. The Services could also participate on the watershed team to help develop the management strategies.

Section 10:

- The outreach and education component of the Scoping step provides a good opportunity to recruit interest among landowners and managers regarding the Habitat Conservation Program.

Data Collection and Analysis: Ecology and other watershed team members evaluate the goals, objectives, and concerns identified in the Scoping step to develop a strategic monitoring and information collection plan that addresses the information needs identified with each. Strategic monitoring collects information to support assessments for priority setting, and the development of management strategies. To the extent possible, the monitoring resources of watershed team members are coordinated to improve the temporal and spatial coverage of the watershed unit. The watershed analysis results compiled by the Department of Natural Resources provide one example of collaborative information. Many other opportunities for coordinated priority setting for the use of monitoring resources were discovered during project interviews. Those opportunities would be realized during this step. Assessment information is used to begin prioritizing the concerns identified in the previous step. Watershed teams can use either formal or informal priority setting procedures. The purpose is to target a subset of project objectives for the further development of a management strategy. Outreach and stakeholder meetings would follow a similar course for priority setting. Targeted project objectives would be carried forward to the next step for inclusion in the Technical Report.

Section 4:

- Listing information needs could be included in the development of the WQMA strategic monitoring plan.

Section 6:

- The monitoring and information collection plan would need to address the information needs associated with cost share grant requirements.
- Preliminary decisions for nominating project objectives for cost share grant support could be made.

Section 7:

- The strategic monitoring plan should incorporate the information needs associated with the ecological goals that are identified in recovery plans, or the listing determination for species

that occur within the WQMA. Example factors and indicators have been identified through a coarse screening process for potential application in ESA consultations (available through the Services). A few of these factors include: stream temperature, water quantity and timing, habitat condition, and sediment. These are parameters that will often be of interest to the watershed team regardless of ESA considerations.

- The Services could consult with the watershed team regarding the need for and design of Biological Assessment or Biological Evaluation for those projects that have already been targeted as WQMA objectives. This could be either an extension of the informal consultation process, or the beginning of the formal consultation.
- If the Services determines that the targeted project is likely to have an adverse affect, the project should be resubmitted to the watershed team for further priority setting and targeting consideration.
- If the reevaluated project is still considered a priority, the watershed team will need to enhance the monitoring and assessment plan for the project in order to support the information needs of the formal consultation process. In addition, the watershed team will need to refine the management strategy for the project for mitigation and alternative designs that may help avoid a jeopardy/adverse modification opinion.
- In priority setting and identifying measures of success, the watershed team should incorporate either those objectives identified in the recovery plan, or coarse screening objectives used for making Section 7 Determination of Effects.
- Interview participants supported the process used in the President's Forest Plan initiative. However, the information that was produced was often on too large of a scale to be useful in the consultation process. The nested watersheds that are a feature of the Ecology watershed approach should help to address this question of scale.
- Participation of the Services with other watershed partners on the watershed team will facilitate the early identification of project components (e.g., site specific standards, habitat restoration, grazing policies, water use allocations) that will require programmatic consultation. Early identification allows the regular watershed planning process to support the programmatic consultation process, instead of making this a separate process that requires additional project resources.

Section 10:

- The Services could begin working with those who have requested HCP support. The Services could target their assistance to high priority areas within the WQMA by using the comprehensive watershed assessment information.

Technical Report: The Ecology Technical Report is a short description of project objectives that have been selected for the watershed. The report is short because of the limited resources that are available for its production. The watershed information clearinghouse could address this issue by enabling Technical Reports to include more information in the future. The Technical Report serves an important function, because it notifies residents and other watershed partners who will be doing what, where, and when. In the past, it has typically covered only Ecology's activities. However, as watershed partnerships expand, the scope of the Technical Report may also have to expand. The Technical Report is a subset of the information that would be included in the watershed information clearinghouse. The Ecology Technical Report could include sufficient information to support the ESA programmatic consultation process if other watershed partners contributed to its production.

Section 4:

- The Technical Report could include information on the status of listed species found within the WQMA.

Section 6:

- The Technical Report can be used as a formal application for a cost sharing grant. The information compiled during the watershed planning process can provide supporting documentation and a rationale for the grant.

Section 7:

- The Technical Report can incorporate the modifications that are necessary for addressing the issues raised in the USFWS/NMFS Biological Opinion. It can also include any formal agreements that are made as part of the programmatic consultation process.
- For projects that are abandoned, the Technical Report can lay the groundwork for an alternative design to be investigated in the next watershed cycle.
- The Technical Report could include all of the information from any completed BAs or BEs, and any Biological Opinion submitted by USFWS or NMFS. The accumulated information may satisfy any Environmental Impact Statement requirements for approved projects.

Section 10:

- Project interview participants indicated that land owners and managers who have completed the HCP process are very proud of their agreements. Completed HCPs could be included in Technical Reports to advertise these successes, and to serve as examples to other HCP candidates.

Implementation: Implementation will be tracked through watershed newsletters and information that is

available through the watershed information clearinghouse. The Technical Report will also provide a reference point for tracking progress.

Section 4:

- Project implementation plans could include provisions for monitoring to support the update of the species status in the next iteration of the watershed cycle.

Section 6:

- Grants could be allocated to targeted projects. The cycle would facilitate the coordination of collaborative funding. Grant tracking and project reporting could be made consistent with the information gathering activities included in the watershed cycle.

Section 7:

- Compliance checks throughout the WQMA could be better coordinated. The list of approved projects could be updated on a regular basis, consistent with the watershed cycle.
- Implementation agreements would be consistent with the findings of the consultation process. These agreements would be completed on the same schedule as other watershed partners. This would result in improved coordination among watershed partners that are collaborating on projects.
- Assist with assessing cumulative impacts (Ainter-related projects@).

Section 10:

- Individual HCP agreements are tailored to each land owner or land manager. However, the knowledge gained from other agreements could be transferred among agreements in the same watershed. This could facilitate the completion of more agreements in a shorter period of time, and could improve consistency among mitigation requirements for those components of the HCPs that support a common approach.

Conclusion: The watershed approach process can readily incorporate ESA considerations and the process that has been designated by the Services. The Watershed Approach planning and implementation steps can replace or be used in lieu of the procedures currently recommended for use by the Services. Several Pacific Northwest and other states use watershed approach steps for information collection, assessment, development, and implementation of management strategies that could fulfill the requirements of the ESA. The coordinated action promoted by the use of a watershed framework will significantly strengthen mitigation and recovery efforts undertaken through the ESA.

4.2 Wet Weather Programs

There are a number of different programs in Washington for controlling pollution from wet weather flows that can be considered for inclusion in a watershed approach. These programs are mandated at the federal, state, and local levels and are implemented within the context of NPDES permits, lending themselves to the five-year cycle established by the WQMA process. These programs are briefly described here and are described in further detail in the subsequent sections.

The combined sewer overflow (CSO) reduction program was initiated for all municipalities and counties by the state in 1985, although some activity was underway in Seattle Metro as early as 1975. The purpose of the legislation was to achieve the greatest possible reduction at the earliest possible date. In 1987, the Puget Sound Water Quality Management Plan (Plan) (PSWQA, 1994) directed major attention to storm water and combined sewer overflows in the Puget Sound region. The Plan contains elements that: recognize and encourage Ecology to complete the CSO guidelines and rule; direct Puget Sound municipalities to submit CSO reduction plans to Ecology; direct local jurisdictions to prepare comprehensive storm water plans; direct Ecology to provide technical assistance and guidelines for local jurisdictions; and encourages storm water pollution prevention planning in smaller watersheds under Chapter 400-12 WAC.

In response to the need for comprehensive NPDES requirements for discharges of storm water, the U.S. Congress amended the CWA in 1987 to require the EPA to establish phased NPDES requirements for storm water discharges. EPA published the initial permit application requirements for certain categories of storm water discharges associated with industrial activity, and discharges from municipal separate storm sewer systems located in municipalities with a population of 100,000 or more in November 1990. Storm water discharge permits provide a mechanism for establishing appropriate controls for discharge of pollutants to waters of the United States.

EPA has recently chartered the Urban Wet Weather Federal Advisory Committee and its Sanitary Sewer Overflow (SSO) and Storm Water Phase II Subcommittees under the Federal Advisory Committee Act. EPA formed these Committees to develop recommendations for coordinating the implementation of wet weather pollution control programs and cost-effective solutions for controlling the impacts of urban wet weather flows. The Committees provide a forum for identifying and addressing a wide range of issues associated with water quality impacts from urban wet weather flows.

The Federal Advisory Committee on Urban Wet Weather Flows is currently formulating a "Watershed Alternative" for including wet weather programs in the watershed framework. The focus of the discussion in Section 4.2.3 assumes that wet weather programs will be encompassed in the watershed framework. The subsequent subsections provide perspective on the wet weather programs in Washington and consider the utility of the more open model of the watershed approach described in Section 3.0.

4.2.1 Combined Sewer Overflows

In 1985, the Washington State Legislature enacted House Bill 815 (codified as Chapter 90.48.460–

490) RCW) which required all municipalities with CSOs to submit CSO Reduction Plans to Ecology by January 1, 1988. The plans were to achieve the greatest possible reduction at the earliest possible date. They included locations, baseline annual frequency and volume and some water quality and sediment sampling data. By 1987, Ecology had defined the greatest possible reduction as one overflow per year at each CSO, and had negotiated interim goals of 75 percent and 79 percent reductions of CSO volumes system-wide by 1997. Reductions to one overflow per year negotiated by Washington were more stringent than the national policy.

Ecology developed CSO reduction rules (Chapter 173–245) and guidelines for implementation in 1987. EPA approved Ecology's CSO program in 1991. CSO Reduction Plans, must include:

- Field assessment and mathematical modeling to establish each CSO's location, baseline annual frequency, and annual volume
- Flow monitoring and sampling data sufficient to establish correlations between and among the group of CSO sites
- Analysis of control/treatment alternatives that considers best management practices (BMPs), pretreatment programs, and sewer use maintenance programs, as well as retention and separation technologies.
- An estimate of the water quality and sediment impacts from the proposed treatment alternatives.

All Washington municipalities with CSOs are continuing to control CSOs, typically utilizing separation and/or storage. Separation into separate storm sewers is generally less expensive and is consistent with the NPDES regulations (PSWQA, 1994).

At the federal level, EPA developed the National Combined Sewer Overflow Control Strategy in 1989. The strategy identified the following three objectives:

- Ensure that if CSOs occur, they are only as a result of wet weather
- Bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements under the CWA
- Minimize the impacts of CSOs on water quality, aquatic biota, and human health from CSOs (EPA, 1995).

In addition, EPA required all States to develop state-wide permitting strategies designed to reduce, eliminate, or control CSOs.

Although the CSO Strategy was successful in focusing increased attention on CSOs, it fell short in

resolving many fundamental issues. In mid-1991, EPA initiated a process to accelerate implementation of the Strategy. The process included negotiations with representatives of the regulated community, State regulatory agencies, and environmental groups. These negotiations were conducted through the Office of Water Management Advisory Group. The initiative resulted in the development of a CSO Control Policy, which was published in the Federal Register on April 19, 1994 (59 Federal Register 18688). The intent of the CSO Control Policy is to:

- Provide guidance to permittees with CSOs, NPDES permitting and enforcement authorities, and state water quality standards (WQS) authorities
- Ensure coordination among the appropriate parties in planning, selecting, designing, and implementing CSO management practices and controls to meet the requirements of the CWA
- Ensure public involvement during the decision-making process.

The CSO Control Policy contains provisions for developing appropriate, site-specific NPDES permit requirements for all CSOs that overflow due to wet weather events. It also announces an enforcement initiative that requires the immediate elimination of overflows that occur during dry weather and ensures that the remaining CWA requirements are complied with as soon as possible.

Key Elements of the CSO Control Policy

The CSO Control Policy contains four key principles to ensure that CSO controls are cost-effective and meet the requirements of the CWA:

- Provide clear levels of control that would be presumed to meet appropriate health and environmental objectives
- Provide sufficient flexibility to municipalities, especially those that are financially disadvantaged, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements
- Allow a phased approach for implementation of CSO controls considering a community's financial capability
- Review and revise, as appropriate, Water quality standards and their implementation procedures when developing long-term CSO control plans to reflect the site-specific wet weather impacts of CSOs.

In addition, the CSO Control Policy clearly defines expectations for permittees, State WQS authorities, and NPDES permitting and enforcement authorities. These expectations include the following:

- Permittees should immediately implement the nine minimum controls (NMC), which are technology-based actions or measures designed to reduce CSOs and their effects on receiving water quality, as soon as practicable but no later than January 1, 1997.
- Permittees should give priority to environmentally sensitive areas.
- Permittees should develop long-term control plans (LTCPs) for controlling CSOs. A permittee may use one of two approaches: 1) demonstrate that its plan is adequate to meet the water quality-based requirements of the CWA (A demonstration approach), or 2) implement a minimum level of treatment (e.g., primary clarification of at least 85 percent of the collected combined sewage flows) that is presumed to meet the water quality-based requirements of the CWA, unless data indicate otherwise (A presumption approach).
- WQS authorities should review and revise, as appropriate, State WQS during the CSO long-term planning process.
- NPDES permitting authorities should consider the financial capability of permittees when reviewing CSO control plans.

In addition to these key elements and expectations, the CSO Control Policy also addresses important issues such as ongoing or completed CSO control projects, public participation, small communities, and watershed planning.

The CSO program in Washington is implemented through NPDES permits issued by Ecology to municipalities. Many of the municipal permits have not been re-issued to incorporate CSO control policy provisions, due to the backlog. The permits that have been re-issued include reporting requirements which entail an annual report summarizing the actions that the municipality has implemented within the preceding year, as well as any sampling results obtained. These reports could be produced from data stored on the virtual watershed atlas. The atlas could also serve to direct interested parties to the report, or a mechanism of distributing annual status information to interested watershed residents, as one forum for public outreach and education.

4.2.2 Separate Storm Sewers

A requirement for comprehensive storm water planning for all urbanized areas within the 12-county Puget Sound region was established in the 1987 Puget Sound Water Quality Management Plan (Plan) (PSWQA, 1994). The Plan also directed Ecology to develop technical manuals for use by local jurisdictions in storm water planning. Ecology's response was a technical manual (Ecology, 1992) that provides engineered designs and best management practices for storm water pollutant control.

To meet the requirements of the CWA Amendments of 1987, EPA promulgated storm water regulations in 1990. These regulations provided for a phased approach to control of municipal storm water

discharges, requiring large municipalities (>250,000 population) to submit a Part 1 NPDES applications by November 1991 and medium municipalities (populations between 100,000 and 250,000) by May 1992. Part 1 applications provided general information about the municipal storm sewer system such as: the municipality's legal authority to control discharges to the storm sewer, a topographic depiction of the entire drainage, landuse data and locations of outfalls, characterization of the discharge quantity and quality.

Part 2 of the large and medium municipal NPDES permit storm water application, which was required to be submitted to the permitting authority one year after Part 1, required comprehensive storm water management plans to be developed. The plans were to include: an inspection program, analytical results of any sampling performed, a program to identify illicit discharges, estimates of annual pollutant loads to the water bodies from the storm sewer discharges, a proposed monitoring program, and other components designed to address specific sources of pollutants.

EPA is currently developing Phase II storm water regulations which will apply to smaller municipalities. In developing the regulations, EPA is striving to encourage permitting authorities to address all storm water sources on a watershed basis.

By 1990, EPA had promulgated regulations requiring management of storm water discharges associated with industrial activity. Most of these industries were eligible for a General Permit for Storm Water Discharges Associated with Industrial Activities, others required individual NPDES permits. As part of the second phase, EPA may also extend current regulation of industrial dischargers to a wider variety of standard industrial classifications. The Phase II storm water regulations are anticipated to be proposed by September of 1997.

In Washington, the Water Quality Program of Ecology is issuing NPDES storm water permits on a watershed basis. All large and medium municipalities within a Water Quality Management Area (WQMA) are permitted under one permit. The Cedar/Green Water Quality Management Area permit (Ecology 1995) includes the following additional requirements:

- Assess the degree to which storm water discharges are impacting selected receiving waters and sediments.
- Evaluate the effectiveness of selected BMPs
- Develop a mechanism for gathering maintaining and using adequate information to conduct planning, priority setting, and program evaluation activities.
- Identification of watershed-wide coordination mechanisms and a schedule to complete the storm water management plans among permittees that share waterbodies; coordination of data management capabilities and modeling capabilities.

One of the permittees under this NPDES permit is the Washington Department of Transportation

(WSDOT) (Ecology, 1995). Specific conditions apply to WSDOT activities in managing storm water from WSDOT roads and highways.

4.2.3 Sanitary Sewer Overflows

In late 1994, a number of municipalities approached EPA asking the Agency for greater national clarity and consistency in the NPDES requirements apply to sanitary sewer overflows (SSOs). EPA formed an internal work group which concluded that the regulation of SSOs varies from state to state and among EPA regions, and decided to convene a national "policy dialogue" among the stakeholders. The SSO Advisory Subcommittee was formed and began meeting in December 1994. The committee is examining the need for national consistency in permitting and enforcement, effective sewer operation and maintenance principals, public notification for SSOs with potential health or environmental dangers and other public policy issues. One of the issues the SSO Advisory Subcommittee is discussing is the storm size and frequency from which SSOs are likely to occur. EPA was asked to consider the Subcommittee's recommendations for regulatory and non-regulatory actions to reduce SSOs nationally.

In Washington, one of the EPA Region 10 states, SSOs are prohibited. SSO incidents are managed through sewage treatment plant NPDES permit compliance schedules, notices of correction, or available enforcement mechanisms. If SSOs are identified through self-reporting, citizen identification, inspections, or general sewer planning, the NPDES permit is modified to require corrective action. Corrective actions may include: identification and separation of cross connections between storm and sanitary sewers, increase pumping station capacity, and inflow and infiltration reduction program implementation. Management of SSOs in the other three EPA Region 10 states (Oregon, Idaho, and Alaska) may vary.

4.2.4 Integrating Wet Weather Flow Programs into the Watershed Approach

The discussion in Section 3.0 focused on the utility of an expanded information clearinghouse for a host of potential watershed partners. Clearinghouses would be used for assimilating data and providing a common storage platform for watershed information including water quality data, agreements among the various parties within a watershed, and indices with metafiles describing monitoring or project objectives, quality assurance programs, type of data, etc. for other sources of data.

The wet weather programs lend themselves to the WQMA watershed model because they are implemented as part of the NPDES program in Washington, for which the WQMA approach was designed. The wet weather programs can benefit from a shared information platform such as the clearinghouse. For the most part, wet weather programs do not require an extensive amount of reporting to the oversight or permitting agencies. However, the information clearinghouse would serve well as an integrating tool. The open platform can serve as a mechanism for information sharing basin-wide and can be easily incorporated into the five-year cycle. From a basis of common information, partners within the watershed could develop management strategies with shared vision and priorities. The subsequent paragraphs describe how wet weather programs could utilize and benefit

from a watershed information clearinghouse.

Scoping: The Scoping step includes: outreach activities such as meetings with potential watershed partners and community groups, newsletters, recruitment of a local sponsor, and formation of watershed teams. A key product of this step is the initiation of discussion regarding WQMA goals, objectives, and water quality concerns. In addition, the collection of information for the watershed information clearinghouse begins.

CSOs

- Outreach activities initiated by Ecology in the WQMA scoping process should target not only the sewer utilities with jurisdiction over CSOs, but also community groups with a demonstrated interest in CSO issues.
- Outreach activities targeting the public could be conducted, in part, through the clearinghouse once it has been established.
- Sewer utilities may have already identified the environmentally sensitive areas in the vicinities of CSOs required under the national CSO Policy. This information, any sampling data, and locations of CSOs that may be stored in GIS (e.g., Seattle has a GIS system with CSO locations) could be shared during the scoping process.
- Status on the utilities' implementation of the Nine Minimum Controls should also be shared, electronically, if possible, during this period.
- In a spirit of partnership and potential for shared priority setting, sewer utilities may have collected data concerning CSOs not specifically required under NPDES permit and not previously shared with the permitting authority.

STORM WATER

- Storm water utilities are not necessarily managed by the same jurisdictions that manage sanitary sewer utilities. It is critical to ensure that all the potentially regulated entities are brought into the partnership.
- Inclusion of established local watershed groups is critical for wet weather programs. These groups perform activities that either directly or indirectly (e.g., education) reduce nonpoint sources of pollution that can impact storm water quality.
- Inclusion of a wide variety of community groups can assist storm water permittees in meeting the public outreach component of the storm water management program required under their storm water permit. Community groups will be helpful in identifying contaminant sources such as illicit discharges to sewers, locations of storm water outfalls, or local projects that have

been implemented that improve water quality.

- Representatives of industry should be included in the initial outreach meetings. Although these industries are not required to perform monitoring under the Ecology issued Storm Water General Permit for Industrial Activities, these industries are required to develop and implement storm water pollution prevention plans.
- A watershed clearinghouse could serve as watershed-wide coordination mechanism for sharing data, models, GIS maps, and sharing analysis of BMP effectiveness studies. Currently, data are housed in numerous locations with relatively limited access. For example, EPA and Ecology maintain separate databases with data gathered from municipal and industrial discharger reports that may include storm water monitoring data. EPA maintains location information on dischargers in GIS that could be relevant to the quality of storm water within a WQMA.

In King and Snohomish counties, the surface water utilities not only manage storm water but also gathers monitoring data on the quality of the smaller drainages within their boundaries. These utilities have invested in GIS systems that can depict the information graphically. In Snohomish county, for example, \$100,000 has been invested to create data layers for drainages, landuses, locations of water quality complaints received. They are intending to add stream gaging stations, locations of minor flooding, and areas in which erosion controls have been instituted. King County has data on land use, drainages, storm water discharge locations stored electronically. They also maintain stream habitat information, although this is not currently in electronic format. This information is valuable to the WQMA process for several reasons. First, display of information geographically can provide a useful tool for the public to understand the watershed issues. Graphical displays of information can also assist decision-makers in more readily establishing priorities. Second, surface water management agencies at the county level have already made investments in databases, although not all information is electronically stored. Continued investment in existing systems is more economically justified than re-creation of such systems. Third, these utilities may provide local sponsorship for the watershed information clearinghouses, although agreements with other partners would need to be developed and implemented describing financial support to the system and data access.

The Ecology issued WQMA storm water permits require utilities to gather and maintain information about the following items: location of storm water outfalls, drainage areas, land uses, zoning, precipitation, and storm water quality and quantity monitoring results. The 1995-issued permits also require a monitoring program be developed to estimate concentrations and loads from representative areas within the jurisdiction's portion of the basin, identify pollutant sources, evaluate the impacts of storm water discharge on receiving waters and sediments, and evaluate the effectiveness of best management practices. Some of this information may be accessible electronically and either imported into the information clearinghouse or accessed through a linkage.

Industries may have access to information relevant to pollution control in the storm water.

For industries that have individual storm water permits, discharge monitoring data may be maintained electronically by either Ecology or EPA. These data may be relevant.

Sharing information from all watershed partners during the scoping, and monitoring phases through a single watershed information clearinghouse will facilitate access to information and provide for better prioritization and decision-making of future monitoring needs.

SSOs

- Because sanitary sewer overflows are prohibited, municipal sewer utilities within the watershed will maintain information on the number and locations of storm sewer overflows. They may also be able to provide likely causes of recurrent overflows.
- Records of citizen identification of SSOs could also be included in the information clearinghouse.

Data Collection and Analysis: The watershed partners evaluate the goals, objectives, and concerns identified in the Scoping step to develop a strategic monitoring and information collection plan that addresses the information needs identified with each. Under the plan, partners collect information to support assessments for priority setting, and the development of management strategies. Monitoring resources of each of the watershed partners should be coordinated to improve the temporal and spatial coverage of the watershed unit. Coordinated priority setting for the use of monitoring resources can identify synergistic data collection opportunities that will enhance the amount of relevant data collected. Assessment information is used to begin prioritizing the concerns identified in the previous step. Prioritization of concerns can be either a formal or informal process. The purpose is to target a subset of objectives for the further development of a management strategy and inclusion in the Technical Report.

CSOs

- Shared evaluation of the WQMA objectives can provide perspective on the level of priority of CSOs for Ecology and the sewer utilities within the WQMA. Understanding these priorities can often clarify information gaps that would need to be required to address CSOs.
- Sharing of existing information may reduce the need for additional monitoring or may enable monitoring to be performed in tandem with other monitoring, thus creating efficiencies.

STORM WATER

- In developing a monitoring strategy, partners can coordinate monitoring programs, reducing redundancy or establishing synergies for collecting, for instance a few samples for additional parameter analysis that will enhance the overall monitoring program.

- The ambient monitoring performed by the surface water utilities in King and Snohomish counties will greatly enhance the data collected by Ecology's ambient monitoring program.
- As data become available and are posted on the watershed information clearinghouse, prioritizing actions could be based on the severity of contaminant loading or on the impacts measured in the water body.

SSOs

- Citizen-sewer utility partnerships developed as a result of a watershed information clearinghouse could perform focused studies of past incidents of storm sewer overflows which may be able to provide likely causes of and potential corrective actions for recurrent overflows. Investigations of causes could include focus on potential cross-connections between storm and sanitary sewers, and identification of locations of high inflow and infiltration.
- Studies identified without a sufficiently high priority to merit funding, could be piggy-backed on other studies with minimal addition of funding. This is one mechanism to accomplish the objective.

The process of sharing in the gathering and analysis of information will assist the watershed partners to build consensus about the risk and priorities, and to understand the associated costs and benefits of addressing wet weather pollutant sources.

Technical Report: The WQMA Technical Report is a short description of priority objectives that have been selected for the watershed. The report development process should document the priorities developed jointly by the watershed partners. During the report preparation process, the watershed information clearinghouse would provide access to more information to include in the Technical Report. The report should also be expanded to include not only Ecology's activities, but also the activities of other watershed partners in controlling pollution from wet weather flows. The Technical Report should also be posted on the clearinghouse as notification to residents and other watershed partners who will be doing what, where, and when.

In some watersheds, the process of joint assessment of priorities may result in a demonstration that wet weather flows contribute one of the highest pollutant loads to the waterbody and, thus, actions that reduce or eliminate the pollutant loads should be implemented first. In other watersheds, greater pollutant loading may be contributed by activities other than wet weather flows. In these areas, watershed planning bodies may develop strategies to manage those activities that impact the water bodies most severely first. As the clearinghouse information is re-visited in subsequent planning efforts, consensus will most likely direct efforts to address the highest remaining priority pollutant sources first.

CSOs

- The Technical Report can provide a forum for balancing the severity of environmental problems. For example, pollutant loading from a specific CSO may actually be rated as a lower priority than upgrading the sewage treatment plant, control of specific storm water discharges, or removal of a hot spot of contaminated sediment which adversely impacts the benthic biota. For example, King County is evaluating the relative impact of its CSOs on the Duwamish River to decide where to spend its limited resources. The study may identify a mechanism other than CSO reduction to improve water and sediment quality in the Duwamish. If this information were shared in the technical report, Ecology and King County could begin discussing alternatives for meeting the Clean Water Act objectives. Flexibility for such discussions is encouraged in the CSO Control Policy. Thus, the technical report provides the forum for balancing of environmental priorities with limited funding sources. Balancing environmental priorities across statutory or programmatic requirements suggests a pooling of funding resources across jurisdictional boundaries (state, cities, counties, wastewater utilities, storm water utilities). However, pooled funding is an issue that will require serious consideration by the watershed partners and changes to current practices and potentially to regulatory requirements.

STORM WATER

- The Technical Report could contain both an assessment of storm water quality in the WQMA and sources of contamination – industrial storm water, urban storm water and their relative contributions. Thus, the Technical Report could serve as an educational tool.
- The Technical Report could also provide focus for local volunteer groups (e.g., 400–12 watershed planning groups and other local citizen groups) in establishing new project ideas. If these groups are also watershed partners, they may commit to specific high priority projects in the report.
- Some watershed partners (e.g., the Washington Department of Transportation, [WADOT] one of the permittees under the WQMA storm water general permits) is enthusiastic about alignment between highest priority environmental issues and funding. For WADOT, however, their prioritization only includes issues for which they have responsibility.

Joint prioritization of concerns by the watershed partners from a shared information platform should result in a shared vision and commitment to necessary steps of implementation. However, prioritization among a number of watershed partners greater effort than are usually allotted to the technical report.

SSOs

- The Technical Report can assist local jurisdictions in focusing resources on the highest priority areas for corrective action because the most severe problems will be documented. They will be able to align resources with priorities.

- The report may serve as a public education tool, informing the public about the relative occurrence of SSOs and their environmental priority. The education and potential resulting activism may enhance the public will to fund corrective measures that would prevent future SSOs.

Implementation: Implementation can be tracked through watershed newsletters and information that is available through the watershed information clearinghouse. Draft permits issued for storm water and CSO control could be posted, and public comment could be received through the clearinghouse. The Technical Report and issued permit conditions will also provide reference points for tracking progress.

CSOs

- Draft municipal NPDES permits with CSO conditions could be posted on the information clearinghouse for public review and comment.
- Re-issued NPDES permits containing requirements for CSO reductions and implementation of the nine minimum controls may be more readily accepted by the regulated utility because they were included in the partnered prioritization process and will understand the priority.
- The information clearinghouse would be the format for status reports on CSO reductions, any permit-required monitoring results, and annual reports.

STORM WATER

- Permits, such as the Cedar/Green WQMA permit (Ecology 1995), issued on a WQMA basis offer a unique opportunity to demonstrate the utility of the information clearinghouse. Currently, this permit is issued to each of the jurisdictions independently and does not rely on interjurisdictional cooperation. An information clearinghouse could provide a forum for jurisdictions to develop agreements that would facilitate permit effectiveness. For example, under the current Cedar/Green WQMA permit, each of the five permittees is required to analyze its storm water management program needs independently from the other permittees in the watershed. A shared information clearinghouse may provide a forum for developing priorities across jurisdictional boundaries. King County is in the initial phases of developing a Regional Needs Assessment. The assessment is examining prioritization of utility issues across jurisdictions, and also examining models for pooling funding to address top priority issues.
- Draft WQMA storm water permits could be posted on the information clearinghouse for public review and comment.
- Ecology could post a list of all of the NPDES industrial storm water permits on the clearinghouse. Conditions could be structured to maximize the implementation of BMPs across permittees on a simultaneous schedule. Water quality monitoring before and following implementation could measure success.

SSOs

- Use of an information clearinghouse format for reporting instances of SSOs, information could provide real time data to Ecology and the public, simultaneously.

Conclusion: The Ecology WQMA process already incorporates wet weather programs because these programs are part of the NPDES program. The WQMA program does not currently serve as a forum for watershed partners to develop a joint vision and strategies to accomplish pollution control. Use of watershed clearinghouses can facilitate partnership development. As partnerships gain momentum, clearinghouses will be used even more effectively to enhance data sharing, synergize monitoring efforts, provide greater access for the public to information thereby enhancing involvement opportunities, and ultimately, focus resources more efficiently to accomplish broader pollution control.